AR-3

TMDL REVIEW CHECKLIST

TMDL:	Spokane River TMDL for Dissolved Metals (State of Washington)
Reviewer	Ben Cope
Date of Review:	07/29/99
Type of TMDL:	Dissolved Metals, Point Source Focus

Elements of a TMDL - HQ recently distributed a "check list" of the essential elements of a TMDL. The first step is to determine if the following elements are included in the TMDL. If they are not, the TMDL cannot be approved.

1. Are waters addressed by the TMDL identified and consistent with the §303(d) list Yes x☐ No ☐

2. Loading Capacity Yes x☐ No ☐

3. Allocations: Load Allocation: Yes x☐ No ☐

4. MOS Yes x☐ No ☐

5. Seasonal Variation Yes x☐ No ☐

Internal Coherence

Each element should be evaluated to determine if a "coherent" basis for that element, exists in the TMDL. In other words, do the reports's data, assumptions and conclusions flow logically to support each essential element. The following questions may assist the reviewer in making this determination for the various elements:

- Are the assumptions identified and explained?
- Are surrogates adequately explained?
- Are the data presented or adequately displayed to support conclusions?
- Are the conclusions thoroughly explained?
- Are the explanations consistent with what the data show?
- Does the TMDL provide the basis to conclude that achieving the allocations in the TMDL will achieve water quality standards, ie., establish the linkage between the two?

	Reviewers Comments
General	Each of the elements and assumptions of this TMDL are adequately identified and explained. This TMDL provides a clear basis to conclude that the allocations will achieve water quality standards, once upstream controls are implemented on Idaho sources to bring the Spokane River into compliance with Washington standards at the Idaho-Washington border.

Loading Capacity/ Load Allocation	This TMDL addresses both loading capacity and load allocation hurdles with a single technical approach, which was to assume that the metals concentrations in the Spokane River at the Idaho-Washington border (the upstream boundary of this TMDL) are equal to the water quality criteria. This approach is reasonable because a basinwide TMDL is under development for the upstream waters in Idaho (public noticed in April 1999), and this proposed TMDL is designed to meet the Washington water quality criteria at the border. The Spokane River TMDL also examines and addresses loading capacity changes due to inputs of hardness to the river from groundwater and effluent discharges. The hardness levels of the permitted discharges to the Spokane River are higher than that of the river, because these facilities pump groundwater for their water supply, and this source water has a significantly higher hardness than the Spokane River. By applying the Gold Book criteria at the end-of-pipe using the effluent hardness (in other words, applying an "effluent-based criterion"), the TMDL accounts for these differences between effluent and ambient hardness levels. Applying the effluent-based criterion is analogous to treating the effluent discharge as if it were a tributary that has higher hardness levels than the mainstem river. Because metals toxicity decreases with increased hardness, the tributary would be allowed to achieve less stringent (i.e., higher) metals criteria by virtue of its elevated hardness levels. It is demonstrated in the TMDL that the mixture of the "tributary" (effluent) and "mainstem" (receiving water) would not result in any local criteria exceedances. Concentration-based loading capacity analysis and allocations are used as "other appropriate measures" in accordance with 40 CFR 130.2. Based on the technical approach for this TMDL, the expression of WLAs in terms of concentrations is both reasonable and adequate to assure water quality standards attainment.

Wasteload Allocation	This TMDL establishes wasteload allocations for Liberty Lake (POTW), Kaiser Aluminum, Inland Empire Paper, and City of Spokane (POTW). The allocations are established at the "effluent-hardness" criterion value or at current performance (plus a 10% buffer), whichever is more stringent. This assures that there are no allowable increases in metals discharges at facilities that currently discharge low concentrations of metals. The TMDL does not list specific WLA values to be assigned for each discharger; however, it does contain detailed narrative instructions (including example calculations) for permit writers to develop the WLAs. This is an acceptable approach, because it allows for adjustments of performance-based limits in the NPDES permitting process (implementation phase) based on up-to-date sampling. The TMDL correctly sets forth an upper limit (the effluent based criterion) of facility performance that ensures the permitted discharge meets standards. The requirement to meet performance-based limits below the effluent-based criterion is appropriate and consistent with anti-degradation requirements in the water quality standards regulations.
Margin of Safety	The TMDL Submittal document lists a number of conservative assumptions used in the analysis.
Seasonal Variation	The TMDL technical support document (Appendix D) includes an evaluation of different seasonal flow conditions to confirm that the allocation approach is protective under all conditions.

Technical Validity Review

The last step is to determine whether the TMDL is technically valid. Elements to consider include but are not limited to

- The adequacy of documentation for the data, methodology, targets ?
- The scale to which the methodology is applied ?
- The methodology's consistency with accepted scientific literature in the field ?

Is the approach:

✓ ***Well established*** - Used often before and widely accepted in the scientific community

✓ ***Reasonable approach*** - It has been used before but not often or in a different context; There is no reason to think it won't apply; or It has not been used before but has been explained very well.

✓ ***Plausible*** - It might or might not apply

✓ ***Implausible.***

Reviewers Comments	
Loading Capacity	This particular type of analysis of effluent hardness and hardness-changes in a river (to evaluate loading capacity for metals) has not been applied before in Region 10 to my knowledge. This technical approach originated in discussions between the Spokane River Dischargers group, EPA, Ecology, and Idaho DEQ. The same approach has been proposed by EPA and Idaho DEQ for the Spokane River portion of the draft TMDL for dissolved metals in the Coeur d'Alene Basin. Given that metals toxicity (and the given water quality standard) is directly affected by hardness, it is reasonable to account for the relationship in setting TMDL elements. The approach used in this TMDL is well reasoned and explained, and a number of example calculations illustrate that the allocations will meet water quality standards.
Load Allocation	Given that no nonpoint sources of metals are identified in the Spokane River, it is reasonable to establish load allocations only for upstream (Idaho) sources to the water quality criterion level. This "starting point" at the upstream boundary of the TMDL is a recognition of Idaho's responsibility to meet the downstream water quality standards.

Wasteload Allocation	See discussion above regarding validity. The TMDL establishes a clear technical process for establishing final permit limits for the point source dischargers, including sample calculations for use by permit writers. Because the permitting calculations are set forth unambiguously, it is reasonable to allow the final numeric values to be established permit-by-permit using up-to-date information on effluent hardness and current performance.

Reviewers Recommendation/Additional Comments

EPA has reviewed this TMDL to determine its effect on future compliance with Spokane Tribe standards, should those standards become approved water quality standards under the Clean Water Act. The current tribal standards establish metals criteria in the total recoverable form, while the state of Washington has dissolved criteria.

Both tribal and state metals criteria are set at levels recommended by EPA it its national criteria for water. When translated into total recoverable permit limits (required in the permitting regulations) using default translators, Ecology's allocations are the same as the allocations would be using the Tribe's total recoverable criteria. The use of site-specific translators that are less conservative than the default translators, however, could result in an exceedance of total recoverable standards downstream.

For this TMDL, the concern about translators is mooted by Ecology's approach of requiring dischargers to achieve metals levels below the effluent criteria levels, and at the levels of current performance. This approach provides additional protections for water quality, and it negates the need to apply site-specific metals translators for the dissolved water quality criteria.

If there is a change in the current status of permits along the Spokane River (i.e., the permit limits revert to an effluent criterion basis rather than a performance basis), it is advised that EPA and the Spokane Tribe be consulted before any efforts are begun to develop site-specific translators for NPDES permittees.